

REMARKS

The Official Action of July 11, 2003, and the prior art cited and relied upon therein have been carefully reviewed. The claims in the application are now claims 1-26 and 39-58, and these claims define patentable subject matter warranting their allowance. Favorable reconsideration and such allowance are respectfully urged.

Acknowledgement by the PTO of the receipt of applicants' papers filed under Section 119 is noted.

The attorney docket number for the present application has changed. Applicant requests the PTO to change its records to reflect the new attorney docket number for this application, which is **YITZCHAIK=1**.

Claims 1-26 and 39-56 have been rejected as obvious under §103 from Kubono et al, reference AT(Kubono) in view of Forrest et al, reference AK(Forrest). This rejection is respectfully traversed.

Briefly, it is applicant's position that the person of ordinary skill in the art, with knowledge of both Kubono and Forrest, would not have come up with applicant's invention for at least three reasons, explained in some detail below. In particular, applicant respectfully submits that it would not have been obvious to combine the two citations as

proposed, in any way which would lead to applicant's invention; and, even if one could combine the two references, contrary to applicant's position, the resultant reconstruction would not correspond to the claimed subject matter.

**I. There is no motivation provided in the prior art to combine the teaching of Kubono and Forrest:**

Kubono deals with chemical vapor deposition (CVD), whilst Forrest deals with ultrahigh-vacuum (UHV) systems. The two systems are very different from one another in nature, and the fact that the compounds of Forrest gave multilayered structures in UHV does not teach or suggest that similar structures would or could be obtained also under CVD conditions. The prior art provides no reasonable expectation of such a result.

The above is even more emphasized by the fact that Forrest deals with van der Waals thin films (see title), while Kubono deals with chemically-bound films (see Fig. 43).

Furthermore, applicant has not found any suggestion in Kubono that one should or even might repeat work thereof with compounds of the type used by Forrest. Actually, applicant knows of no such motivation that is expressed in the cited prior art.

The motivation given in the Office Action is not valid, because it is based on the findings of the present

application, i.e. it is not any motivation provided by or in the prior art. The Examiner indicates that "it would have been obvious to one of ordinary skill in the art to select the dianhydrides from the Forrest reference to determine the conjugated polymers, as disclosed in Kubono, in the method of forming a multi-layered structure, in order to gain the advantages of the combination of the references...". To the contrary, the benefit of the combination of the references clearly is **not** taught in the prior art, but only by the present invention. Respectfully, it is not proper to rely on the teachings of the present application as something motivated in the prior art.

Applicant should also note that the dianhydrides of Forrest are very far from being polymers, and therefore selecting the Forrest dianhydrides to determine Kubono's polymers is not at all obvious.

Accordingly, applicant's invention would not have been obvious from a consideration together of Kubono and Forrest for the reasons pointed out above.

**II. The inventive combination of the references is  
practically impossible.**

Kubono's method, appearing on pages 425-428, is characterized in that "the substrate temperature is the most effective factor for the regulation of molecular orientation"

(page 425, first paragraph of section 4.2, lines 6-7). The temperature recited in the reference is 25°C (see, for instance page 426, first full paragraph, line 7).

As regulation of molecular orientation is essential for obtaining multilayered structures, and as the rejection alleges that the skilled person is motivated to do by the combination of the references, the skilled person should work with Forrest's compounds in Kubono's temperature: i.e. 25°C, in chemical vapor deposition. This is practically impossible with Forrest's compounds PTCDA & CuPC, since at such temperatures one cannot obtain vapor of these compounds, as their sublimation temperatures are in the range of 200-400°C. Under UHV conditions, in molecular beams, as used by Forrest, working with these compounds at such a temperature is possible, but not in the CVD systems reviewed by Kubono. Therefore, it is impossible to use the above compounds taught by Forrest in the methods reviewed by Kubono, as suggested by the rejection.

Stated in other words, the strong teaching of Kubono is to use a substrate temperature of 25°C, as such "substrate temperature is the most effective factor for regulation of molecular orientation." To do as Kubono requires using Forrest's compounds would result in something inoperative. On the other hand, to use other temperatures contrary to what is

taught by Kubono would be to "fly in the face" of Kubono's requirements, and this would be the very antithesis of obviousness.

Regarding NTCDA, a compound also mentioned by Forest, this compound may sublime under Kubono's CVD conditions, but will only physisorb on the surface and will not chemisorb to the amine containing "monolayer" taught by Kubono. In case the substrate temperature were to be raised to allow chemical reaction, the underlaying amine-containing layer will be decomposed and sublimed away. Again, the proposed combination results in something inoperative; this cannot have been obvious.

Indeed, according to the present invention, in contradiction to the teaching of Kubono, the process is desirably carried out at temperature of between 130 and 450°C (see page 10, line 3). Applicant notes that the temperature effect is already referred to in the independent claims of the present application which recite "said depositing being carried out under conditions which allow chemisorption of the selected compound in a molecular monolayer, by covalent coupling of one end of the compound to the substrate, and sublimation of non-covalently bonded compounds from the surface".

Nevertheless, new claims 57 and 58, support for which is to be found at page 10, line 3, are added, which make this point more directly or specifically. These new claims are patentable because they depend from and incorporate the subject matter of claim 1.

Claim 1 and the claims which depend therefrom are non-obvious from the proposed combination for these additional reasons as pointed out above.

**III. The impossible combination of Forrest and Kubono does not yield the present invention.**

The present invention recites explicitly, in all its independent claims, that the method includes "covalent coupling of one end of the compound to the substrate". Kubono, on the other hand, teaches systems without chain ends that react with the substrate (see Fig. 43 of Kubono, "where solid circles and triangles refer to the reacted chain ends", and the triangles near the substrate are all open, and none is solid).

Thus, even if an inventive skilled person does the impossible, and uses the compounds taught by Forrest in the system reviewed by Kubono, such person will not be carrying out the process claimed in the present invention.

For this third reason as well, the present invention defines non-obvious subject matter over Kubono in view of Forrest.

Applicant respectfully requests withdrawal of the rejection based on §103.

No rejections have been imposed under 35 U.S.C. 112, and accordingly applicant understands that applicant's claims are deemed by the PTO to fully meet the requirements of 35 U.S.C. 112, and applicant is proceeding in reliance thereon.

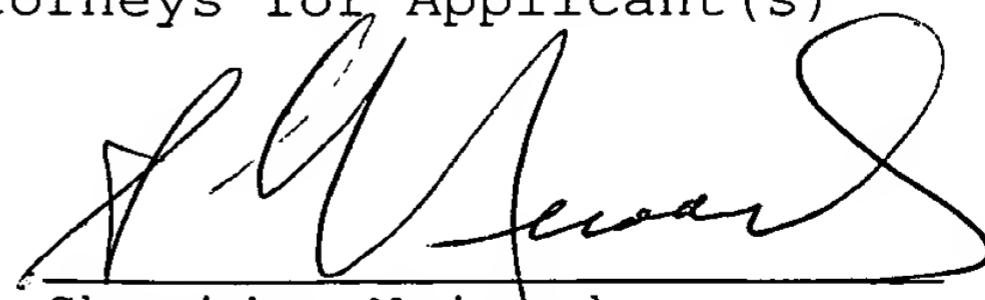
The prior art documents made of record and not relied upon have been noted along with the implication that such documents are deemed by the PTO to be insufficiently pertinent to warrant their applications against any of applicant's claims.

Favorable reconsideration and allowance are earnestly solicited.

Respectfully submitted,

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